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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,480	03/31/2004	Karen K.Y. Young	022101-000230US	8589
41504	7590	06/05/2006	EXAMINER	
TOWNSEND AND TOWNSEND AND CREW, LLP 2 EMBARCADERO CENTER, 8TH FLOOR SAN FRANCISCO, CA 94111			SALVOZA, M FRANCO G	
			ART UNIT	PAPER NUMBER
			1648	
DATE MAILED: 06/05/2006				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,480

Applicant(s)

YOUNG, KAREN K.Y.

Examiner

M. Franco Salvoza

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03/09/06.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 1-27, 34-39 and 51-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-33 and 40-50 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date <u>03/07/05</u> <u>09/07/09</u> | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Election/Restrictions***

Applicant's election with traverse of Group IV in the reply filed on March 09, 2006 is acknowledged. The traversal is on the ground(s) that the examination of the claims in Groups I-IV, would not create an undue burden, especially for claims 34-39 in Group IV, which depend from claims in Group IV and recite SEQ ID NO:s 15 and 74, each of which comprise SEQ ID NO:9. Applicant also points out that claim 50 was not included in any restriction group and should be considered in Group IV.

Applicant's arguments are found persuasive in regards to claim 50, but not found persuasive as to withdrawal of the Restriction requirement. As explained in the Restriction requirement, each nucleotide sequence is presumed to represent an independent and distinct invention, and to search each sequence with different nucleotides or components that create different structural features would impose an undue burden. Furthermore, while claims 34-39 depend from claim 28 and recite SEQ ID Nos: 15 and 74, each of which comprise SEQ ID NO:9, they only comprise SEQ ID NO:9, are not limited to SEQ ID NO:9, and may include additional nucleotides and structural components which would impose searches not required for the other elected sequences and create an undue search burden.

The requirement is still deemed proper and is therefore made FINAL.

Claims 28-33, 40-49 and 50 (for instructions) are pending and under consideration.

Claim Notes

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The use of a trademark has been noted in this application in claim 47. It should be capitalized or accompanied by the TM or ® symbol wherever it appears and be accompanied by the generic terminology. Although the use of trademarks is permissible in patent applications, the proprietary nature of the trademarks should be respected and every effort made to prevent their use in any manner which might adversely affect their validity as trademarks.

Specification

The abstract of the disclosure is objected to because it contains a typo: “ad”. Correction is required. See MPEP § 608.01(b).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 28, 40, 41, 48, 49, 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erlich et al. (U.S. Patent 6040166) in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support.

Claim 28 recites a kit for the detection of a nucleic acid of a member of the Japanese encephalitis virus serogroup, comprising: a) a first oligonucleotide that comprises SEQ ID NO.:8; b) a second oligonucleotide that hybridizes to a nucleic acid of SEQ ID NO.:9 or a

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complement thereof; and c) a detectably-labeled third oligonucleotide that hybridizes to a nucleic acid of SEQ ID NO.:16, or the complement thereof.

Claims 40, 41 recite the kit of claim 28, wherein the detectably-labeled third oligonucleotide comprises SEQ ID NO.:28 (identical to SEQ ID NO:16), or the complement thereof; wherein the detectably-labeled third oligonucleotide comprises a fluorescent moiety.

Claims 48, 49 recite the kit of claim 28, additionally comprising a thermostable DNA polymerase; wherein the thermostable DNA polymerase is *Thermus aquaticus* DNA polymerase.

Claim 50 recites the kit of claim 28, additionally comprising instructions for detecting a nucleic acid of a member of the Japanese encephalitis virus serogroup.

Erlich et al. (U.S. Patent 6040166) teaches a kit for detecting and amplifying a nucleic acid sequence from a virus including two primers, a thermostable DNA polymerase and a detectably labeled third nucleotide (column 3, first full paragraph; column 4, lines 18-57). (Note: It is noted that the “instructions” are a physical component of the claimed kit, but are not patentable because they are not functionally related to the instant polypeptide, see *In re Gulack*, 703 F.2d 1381, 217 USPQ 401 (Fed. Cir. 1983).

Erlich et al. does not teach a first nucleotide that comprises SEQ ID NO:8.

However, as shown in the Sequence search of SEQ ID NO: 8 (Result No. 3 in 8.rge), Beasley et al. teaches a sequence that comprises SEQ ID NO:8, and further that the sequence structurally correlates with West Nile virus, a member of the Japanese virus serogroup.

Additionally, Erlich et al. does not teach a second oligonucleotide that hybridizes to SEQ ID NO: 9 or a complement thereof, or a detectably labeled third oligonucleotide that hybridizes to a nucleic acid of SEQ ID NO:16 or the complement thereof.

However, as shown in the Sequence searches (Result 44 in 9.rge, Result 46 in 16.rge; AF317203), Lanciotti et al. teaches genomic West Nile virus (a member of the Japanese encephalitis virus serogroup) oligonucleotides that correspond 100% to SEQ ID NO:s 9 and 16. Thus, oligonucleotides of West Nile virus and viruses of the JEV serogroup with segments in common with West Nile would hybridize to them.

Furthermore, in the recent court decision *In Re Deuel* 34 USPQ 2d 1210 (Fed. Cir. 1995), the Court of Appeals for the Federal Circuit determined that the existence of a general method of identifying a specific DNA does not make the specific DNA obvious. Regarding structural or functional homologs, however, the Court stated,

"Normally, a *prima facie* case of obviousness is based upon structural similarity, i.e., an established structural relationship between a prior art compound and the claimed compound. Structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties (see page 9, paragraph 4 of attached ref)."

Since the claimed oligonucleotides simply represent structural homologs of the genomic flavivirus oligonucleotides taught by Beasley et al. and Lanciotti et al., the claimed primers and probes are *prima facie* obvious over the cited references in the absence of secondary considerations.

With regard to the issue of equivalence of the primers, MPEP 2144.06 notes "Substituting equivalents known for the same purpose. In order to rely on equivalence as a rationale supporting an obviousness rejection, the equivalency must be recognized in the prior art, and cannot be based on applicant's disclosure or the mere fact that the components at issue are functional or mechanical equivalents. An express suggestion to substitute one equivalent component or process for another is not necessary to render such substitution obvious. In re Fout, 675 F.2d 297, 213 USPQ 532 (CCPA 1982)."

With regard to the issue of reasonable expectation of success in using such equivalents, Buck expressly provides evidence of the equivalence of primers. Specifically, Buck invited primer submissions from a number of labs (39) (page 532, column 3), with 69 different primers being submitted (see page 530, column 1). Buck also tested 95 primers spaced at 3 nucleotide intervals along the entire sequence at issue, thereby testing more than 1/3 of all possible 18 mer primers on the 300 base pair sequence (see page 530, column 1). When Buck tested each of the primers selected by the methods of the different labs, Buck found that EVERY SINGLE PRIMER worked (see page 533, column 1). Only one primer ever failed, No. 8, and that primer functioned when repeated. Further, EVERY SINGLE CONTROL PRIMER functioned as well (see page 533, column 1). Buck expressly states "The results of the empirical sequencing analysis were surprising in that nearly all of the primers yielded data of extremely high quality (page 535, column 2)." Therefore, Buck provides direct evidence that all primers would be expected to function, and in particular, all primers selected according to the ordinary criteria, however different, used by 39 different laboratories. It is particularly striking that all 95 control primers functioned, which represent 1/3 of all possible primers in the target region. This clearly shows that every primer would have a reasonable expectation of success.

Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, absent unexpected results to the contrary.

Claims 29, 30, 31, 32, 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support in view of Will (U.S. Patent 6001611).

Claims 29, 31 recite the kit of claim 28, wherein the residue at position 24 of SEQ ID 8 is

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N6-alkyl-deoxyadenosine; wherein the residue at position 25 of SEQ ID NO.:8 is N6-alkyl-deoxyadenosine. Claim 30 recites the kit of claim 29, wherein the residue at position 24 of SEQ ID NO:8 is N6-methyl-deoxyadenosine.

Claim 32 recites the kit of claim 31 wherein the residue at position 25 of SEQ ID NO:8 is N6-tert-butylbenzyl-deoxyadenosine.

Claim 33 recites the kit of claim 28 wherein the residue at position 24 of SEQ ID NO:8 is N6-methyldeoxyadenosine and the residue at position 25 of SEQ ID NO:8 is N6-tertbutylbenzyldeoxyadenosine.

See the teachings of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support above.

Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support does not teach the primer modifications.

Will teaches the covalent modifications to nucleic acid primers by adding alkyl (including methyl, the most basic alkyl) groups as well as the p-tert-butylbenzyl group to adenosine to nucleotides positioned near the 3' ends in order to reduce primer nonspecificity and improve yield (columns 3 (line 17) to 4 (line 20)).

One of ordinary skill in the art at the time the invention was made would have been motivated to combine the kit of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support and the primer modifications of Will because Will teaches that the modifications can results in less non-specific amplification product.

One of ordinary skill in the art at time the invention was made would have had a reasonable expectation of success for using the kit of Erlich et al. in view of Beasley et al. and

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Lanciotti et al. (2002) with Buck et al. in support with the nucleic acid primer modification of Will because Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support and Will both teach using primers to detect and amplify nucleic acid sequences.

Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, absent unexpected results to the contrary.

Claims 42, 47 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support in view of Rigler et al. (1998).

Claims 42, 47 recite the kit of claim 41, wherein the detectably-labeled third oligonucleotide further comprises a quencher moiety; wherein the quencher moiety is Cy5™.

See the teachings of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support.

Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support does not teach the use of Cy5.

Rigler et al. teaches the use of Cy5 as a 5' fluorescent tag for the detection of specifically amplified target DNA sequences in PCR reactions.

One of ordinary skill in the art at the time the invention was made would have been motivated to combine the kit of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support and the Cy5 of Rigler et al. because Rigler et al. teaches that the use of tethered-dye molecules such as Cy5 can enhance detection of specific, tagged DNA

amplification products.

One of ordinary skill in the art at time the invention was made would have had a reasonable expectation of success for using the kit of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support with the Cy5 of Rigler et al. because Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support and Rigler et al. both teach detection and amplification of nucleic acid sequences.

Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, absent unexpected results to the contrary.

Claim 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support in view of Lanciotti et al. (2001).

Claims 44 recites the kit of claim 41, wherein the fluorescent moiety is 6-carboxyfluorescein.

See the teachings of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support.

Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support does not teach the use of 6-carboxyfluorescein.

Lanciotti et al. (2001) teaches the use of 6-carboxyfluorescein as a fluorescent moiety to detect nucleic acids post amplification (pp. 4506-7).

One of ordinary skill in the art at the time the invention was made would have been

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motivated to combine the kit of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support and the 6-carboxyfluorescein of Lanciotti et al. (2001) because Lanciotti et al. (2001) teaches that the use of fluorescence moieties such as 6-carboxyfluorescein along with quenchers can result in a measureable increase in fluorescence to more readily detect amplified nucleic acids.

One of ordinary skill in the art at time the invention was made would have had a reasonable expectation of success for using the kit of Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support with the 6-carboxyfluorescein of Lanciotti et al. (2001) because Erlich et al. in view of Beasley et al. and Lanciotti et al. (2002) with Buck et al. in support and Lanciotti et al. (2001) both teach using nucleic acid amplification techniques as well as ways to detect amplification product more readily.

Therefore, the invention as a whole would have been prima facie obvious to one of ordinary skill in the art at the time the invention was made, absent unexpected results to the contrary.

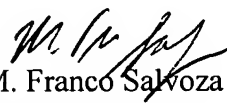
Conclusion

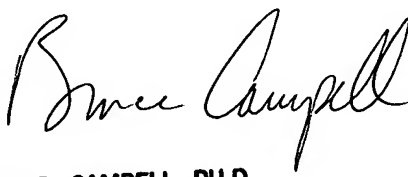
Any inquiry concerning this communication or earlier communications from the examiner should be directed to M. Franco Salvoza whose telephone number is (571) 272-8410. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bruce Campbell can be reached on (571) 272-0974. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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May 26, 2006


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